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EXAMINER
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MONIKANG, GEORGE C

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/550,230

Applicant(s)

VIEILLEDENT ET AL.

Examiner

George C. Monikang

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/550,230.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/20/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, filed 8/1/2007, with respect to the rejection(s) of claim(s) 1-28 under Yamada have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sotome et al.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1, in view of Sotome et al, US Patent 2003/0086572 A1.

Re Claim 1, Yamada discloses a method for processing an electric sound signal (fig. 14): wherein an electric sound signal on the right (fig. 14: Ar) and an electric sound signal on the left (fig. 14: Al) are processed to produce a processed electric sound signal on the right (fig. 14: R1) and a processed electric sound signal on the left (fig. 14: L1) including the steps of: simulating first processed electric signal of a right sound signal from the right (fig. 14: 36); simulating second processed electric signal of a right sound signal from the left (fig. 14: 34); simulating third processed electric of a left sound signal from the right (fig. 14: 31); simulating a fourth processed electric signal of a left sound signal from the left (fig. 14: 35); but fails to disclose detection of sound signals corresponding to a microphone in a reflective environment (Sotome et al, fig. 2: 101R, 101L; para 0046); wherein the right sound signal and the left sound signal correspond to the diffusion of the electric sound signal on the right and the electric sound signal on the left by a right speaker and a left speaker respectively (Sotome et al, fig. 2: 103, 104, 101R, 101L; para 0046), the processed electric signal on the right is a combination of a first and third processed electric signal, and the processed electric signal on the left is a combination of a second and fourth processed electric signal (Sotome et al, fig. 4; paras 0049-0051). However, Sotome et al does.

Taking the combined teachings of Yamada and Sotome et al as a whole, one skilled in the art would have found it obvious to modify the method for processing an electric sound signal (fig. 14): wherein an electric sound signal on the right (fig. 14: Ar) and an electric sound signal on the left (fig. 14: Al) are processed to produce a processed electric sound signal on the right (fig. 14: R1) and a processed electric sound

signal on the left (fig. 14: L1) including the steps of: simulating first processed electric signal of a right sound signal from the right (fig. 14: 36); simulating second processed electric signal of a right sound signal from the left (fig. 14: 34); simulating third processed electric of a left sound signal from the right (fig. 14: 31); simulating a fourth processed electric signal of a left sound signal from the left (fig. 14: 35) of Yamada with detection of sound signals corresponding to a microphone in a reflective environment (Sotome et al, fig. 2: 101R, 101L; para 0046); wherein the right sound signal and the left sound signal correspond to the diffusion of the electric sound signal on the right and the electric sound signal on the left by a right speaker and a left speaker respectively (Sotome et al, fig. 2: 103, 104, 101R, 101L; para 0046), the processed electric signal on the right is a combination of a first and third processed electric signal, and the processed electric signal on the left is a combination of a second and fourth processed electric signal (Sotome et al, fig. 4: paras 0049-0051) of Sotome et al to eliminate cross talk.

Claims 2 & 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent 2003/0086572 A1 as applied to claim 1 above, in view of Ishii, US Patent 6,961,433 B2.

Re Claim 2, the combined teachings of Yamada and Sotome et al disclose the method according to claim 1, but fails to disclose wherein the simulating includes: producing a white acoustic sound signal on the right is with an acoustic diffusion system, from a white noise electric signal (Ishii, fig. 6: 6R1; col. 10, lines 46-61);

detecting with an acoustic detector a corresponding acoustic signal received in the form of a modified white received electric sound signal on the right and a modified white electric sound signal on the left corresponding to the reception of the white acoustic sound signal on the right (Ishii, fig. 6: BR1; col. 10, lines 46-61); producing a frequency spectrum on the right corresponding to a white noise electric signal on the right, and two received frequency spectrums, respectively corresponding to the modified white received electric sound signal on the right and to the modified white received electric sound signal on the left (Ishii, fig. 6: 6L1; col. 10, lines 46-61); producing a first set of coefficients from frequency filters from the frequency spectrum on the right and from the frequency spectrum of the modified white received electric sound signal on the right (Ishii, fig. 8: FR1R2; col. 12, line 61 through col. 13, line 12); producing a second set of coefficients from frequency filters from the frequency spectrum on the right and from the frequency spectrum of the modified white received electric sound signal on the left (Ishii, fig. 8: FL1R2; col. 12, line 61 through col. 13, line 12); producing a white acoustic sound signal on the left with an acoustic diffusion system, from a white noise electric signal (Ishii, col. 10, lines 46-61); detecting a corresponding acoustic signal received in the form of a modified white received electric sound signal on the left and a modified white electric sound signal on the right corresponding to the reception of the white acoustic sound signal on the left with an acoustic detector (Ishii, fig. 6: BR1, BR2, BL1, BL2; col. 10, lines 46-61); producing a frequency spectrum on the left corresponding to a white noise electric signal on the left (Ishii, fig. 6: GL1L2; col. 10, lines 46-61), and two received frequency spectrums, respectively corresponding to the modified white

received electric sound signal on the left and to the modified white received electric sound signal on the right (Ishii, fig. 6: GL1, GR1; col. 10, lines 46-61); producing a third set of coefficients from frequency filters from the frequency spectrum on the left and from the frequency spectrum of the modified white received electric sound signal on the left (Ishii, fig. 8: FL1L2; col. 12, line 61 through col. 13, line 12); producing a fourth set of coefficients from frequency filters from the frequency spectrum on the left and from the frequency spectrum of the modified white received electric sound signal on the right (Ishii, fig. 8: FR1L1; col. 12, line 61 through col. 13, line 12), said four sets of coefficients forming a quadrille of coefficient sets (Ishii, col. 12, line 61 through col. 13, line 12: 22R1, 22R2, 22L1, 22L2); and filtering the electric sound signals on the right and left with frequency filters whose parameters are given by said quadrille (Ishii, col. 12, line 61 through col. 13, line 12: 22R1, 22R2, 22L1, 22L2). However, Ishii does.

Taking the combined teachings of Yamada, Sotome et al and Ishii as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada and Sotome et al with wherein the simulating includes: producing a white acoustic sound signal on the right is with an acoustic diffusion system, from a white noise electric signal (Ishii, fig. 6: 6R1; col. 10, lines 46-61); detecting with an acoustic detector a corresponding acoustic signal received in the form of a modified white received electric sound signal on the right and a modified white electric sound signal on the left corresponding to the reception of the white acoustic sound signal on the right (Ishii, fig. 6: BR1; col. 10, lines 46-61); producing a frequency spectrum on the right corresponding to a white noise electric signal on the right, and two received frequency

spectrums, respectively corresponding to the modified white received electric sound signal on the right and to the modified white received electric sound signal on the left (*Ishii, fig. 6: 6L1; col. 10, lines 46-61*); producing a first set of coefficients from frequency filters from the frequency spectrum on the right and from the frequency spectrum of the modified white received electric sound signal on the right (*Ishii, fig. 8: FR1R2; col. 12, line 61 through col. 13, line 12*); producing a second set of coefficients from frequency filters from the frequency spectrum on the right and from the frequency spectrum of the modified white received electric sound signal on the left (*Ishii, fig. 8: FL1R2; col. 12, line 61 through col. 13, line 12*); producing a white acoustic sound signal on the left with an acoustic diffusion system, from a white noise electric signal (*Ishii, col. 10, lines 46-61*); detecting a corresponding acoustic signal received in the form of a modified white received electric sound signal on the left and a modified white electric sound signal on the right corresponding to the reception of the white acoustic sound signal on the left with an acoustic detector (*Ishii, fig. 6: GL1L2, GL1R1; col. 10, lines 46-61*); producing a frequency spectrum on the left corresponding to a white noise electric signal on the left (*Ishii, fig. 6: GL1L2; col. 10, lines 46-61*), and two received frequency spectrums, respectively corresponding to the modified white received electric sound signal on the left and to the modified white received electric sound signal on the right (*Ishii, fig. 6: GL1, GR1; col. 10, lines 46-61*); producing a third set of coefficients from frequency filters from the frequency spectrum on the left and from the frequency spectrum of the modified white received electric sound signal on the left (*Ishii, fig. 8: FL1L2; col. 12, line 61 through col. 13, line 12*); producing a fourth set of coefficients from frequency filters



from the frequency spectrum on the left and from the frequency spectrum of the modified white received electric sound signal on the right (Ishii, fig. 8: FR1L1; col. 12, line 61 through col. 13, line 12), said four sets of coefficients forming a quadrille of coefficient sets (Ishii, col. 12, line 61 through col. 13, line 12: 22R1, 22R2, 22L1, 22L2); and filtering the electric sound signals on the right and left with frequency filters whose parameters are given by said quadrille (Ishii, col. 12, line 61 through col. 13, line 12: 22R1, 22R2, 22L1, 22L2) as taught in Ishii to obtain sound depth.

Re Claim 7, the combined teachings of Yamada, Sotome et al and Ishii disclose the method according to claim 2 wherein quadrilles of sets of coefficients are produced for different configurations of the acoustic diffusion system and or for different rooms in which the acoustic diffusion system is placed for the production of coefficients (Ishii, col. 10, lines 46-61).

Re Claim 8, the combined teachings of Yamada, Sotome et al, and Ishii disclose the method according to claim 7, wherein one of the configurations is a configuration in cone of confusion (Ishii, fig. 1: user's ears).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 in view of Ishii, US Patent 6,961,433 B2 as applied to claim 2 above, and further in view of Breebaart et al, US Patent 7,181,019 B2.

Re Claim 3, the combined teachings of Yamada, Sotome et al and Ishii disclose the method according to claim 2, but fails to disclose wherein: the sets of coefficients

are produced from the two spectrums by a component to component complex division of complex points from these components in each of these spectrums. However, Breebaart et al does (col. 5, lines 26-34).

Taking the combined teachings of Yamada, Sotome et al, Ishii and Breebaart et al as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada, Sotome et al and Ishii with wherein: the sets of coefficients are produced from the two spectrums by a component to component complex division of complex points from these components in each of these spectrums as taught in Breebaart et al (col. 5, lines 26-34) so the phase difference can be calculated.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 in view of Ishii, US Patent 6,961,433 B2 as applied to claim 2 above, and further in view of Ueno et al, US Patent 5,960,390.

Re Claim 4, the combined teachings of Yamada, Sotome et al, and Ishii disclose the method according to claim 2, but fails to disclose wherein said diffusion includes the steps of producing the coefficients from four temporal filters from coefficients of the first, second, third and fourth frequency filters respectively. However, Ueno et al does (fig. 5: 104a-104d; col. 10, lines 13-24).

Taking the combined teachings of Yamada, Sotome et al, Ishii and Ueno et al as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada, Sotome et al and Ishii with wherein said diffusion includes the

steps of producing the coefficients from four temporal filters from coefficients of the first, second, third and fourth frequency filters respectively as taught in Ueno et al (fig. 5: 104a-104d; col. 10, lines 13-24) so the signals can be converted to time domain.

Re Claim 5, the combined teachings of Yamada, Sotome et al, Ishii and Ueno et al disclose the method according to claim 4, wherein the coefficients of temporal filters are modified by an operation including at least one of the steps of: normalizing temporal filters of a quadrille, on the maximum of the direct field or on quadratic average of the diffuse field (Ueno et al, fig. 5: 105a-105d); temporal resetting of the temporal filters with relation to each other (Ueno et al, fig. 5: 104a-104d; col. 10, lines 13-24); providing a time lag of samples from a temporal filter; masking of some samples from the temporal filter (Ueno et al, fig. 5: 104a-104d; col. 10, lines 13-24); alteration of amplitudes from certain samples from a temporal filter (Ueno et al, col. 5, line 66 through col. 6, line 14).

Re Claim 6, the combined teachings of Yamada, Sotome et al, Ishii and Ueno et al disclose the method according to claim 4 wherein the coefficients from a temporal filter those whose rank is greater than a given rank are eliminated and where in the coefficients from a temporal filter those whose value is lower than a threshold are eliminated (Ueno et al, col. 12, lines 15-28).

Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 as applied to claim 1 above, in view of Embree, US Patent 5,818,941.

Re Claim 9, the combined teachings of Yamada and Ishii disclose the method according to claim 1 but fails to disclose wherein to diffuse, the electric sound signals processed by the filters are combined with the original unprocessed electric sound signals, and a combined electric sound signal on the right and a combined electric sound signal on the left are obtained. However, Embree does (fig. 1b).

Taking the combined teachings of Yamada, Sotome et al and Embree as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada and Sotome et al with wherein to diffuse, the electric sound signals processed by the filters are combined with the original unprocessed electric sound signals, and a combined electric sound signal on the right and a combined electric sound signal on the left are obtained as taught in Embree (fig. 1b) in order to decode audio data at sufficiently high resolution.

Re Claim 10, the combined teachings of Yamada, Sotome et al and Embree disclose the method according to claim 9, wherein, to combine, a time lag is introduced between the acoustic electric sound signals processed by the filters and the original unprocessed electric sound signals (Yamada, fig. 14: 38).

Re Claim 11, the combined teachings of Yamada, Sotome et al and Embree disclose the method according to claim 9 wherein combined electric sound signals on the right and left are filtered on given frequency bands (Yamada, fig. 14: 31-36) and, a delay is introduced in each of these frequency bands (Yamada, fig. 14: 38).

Re Claim 12, the combined teaching of Yamada, Sotome et al and Embree disclose the method according to claim 11, wherein combined electric sound signals on

the right and left are filtered by using a high-pass filter (Embree, fig. 1b: 124), and high-frequency electric sound signals are obtained, combined electric sound signals on the right and left are filtered by using a low-pass filter (Embree, fig. 1b: 124), and low-frequency electric sound signals are obtained.

Re Claim 13, the combined teachings of Yamada, Sotome et al and Embree disclose the method according to claim 12, wherein a first delay is introduced in the low-frequency electric sound signals (Yamada, fig. 14: 38) and a second delay is introduced in the high-frequency electric sound signals (Yamada, fig. 14: 38).

Re Claim 14, the combined teachings of Yamada, Sotome et al and Embree disclose the method according to claim 13, wherein the first delay introduced in the low-frequency electric sound signal obtained from the combined electric sound signal on the right is different from the first delay introduced in the low-frequency electric sound signal obtained from the combined electric sound signal on the left (fig. 17: para 0013), and the second delay introduced in the high-frequency electric sound signal obtained from the combined electric sound signal on the right is different from the second delay introduced in the high-frequency electric sound signal obtained from the combined electric sound signal on the left (fig. 17: para 0013).

Claims 15-17, 19 & 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 as applied to claim 1 above, in view of Ueno et al, US Patent 5,960,390.

Re Claim 15, the combined teachings of Yamada and Sotome et al disclose the method according to claim 1, where the filtering coefficients are coefficients of finite impulse response filters (Yamada, fig. 14: 31-36) but fails to disclose characterized in that, wherein, to filter, a signal transform of an electric sound signal is performed and a transformed signal is obtained, the transformed signal is multiplied by the filtering coefficients and a multiplied signal is obtained, the multiplied signal is transformed by an inverse transform. However, Ueno et al does (fig. 5: 104a-104d, 107; col. 13, lines 17-25).

Taking the combined teachings of Yamada, Sotome et al and Ueno et al as a whole, one skilled in the art would have found it obvious to modify the method according to claim 1, where the filtering coefficients are coefficients of finite impulse response filters (fig. 14: 31-36) of Yamada and Sotome et al with characterized in that, wherein, to filter, a signal transform of an electric sound signal is performed and a transformed signal is obtained, the transformed signal is multiplied by the filtering coefficients and a multiplied signal is obtained, the multiplied signal is transformed by an inverse transform as taught in Ueno et al (fig. 5: 104a-104d, 107; col. 13, lines 17-25) to effectively prevent pre-echo and post-echo from being generated and can perform effective coding to which an psycho-acoustic model is applied.

Re Claim 16, the combined teachings of Yamada, Sotome et al and Ueno et al disclose the method according to claim 15, wherein, to perform the transform a frame of the electric sound symbol is divided into N blocks (Ueno et al, fig. 5: 101), the transform of each of the blocks is performed (Ueno et al, fig. 5: 104a-104d), the filtering

coefficients are divided into N packets of coefficients (Ueno et al, fig. 5: 101), the N blocks of input data are multiplied two by two by the N packets of filter coefficients (Ueno et al, fig. 5: 107; col. 11, lines 38-44), and the multiplied blocks are added to obtain the multiplied signal (Ueno et al, fig. 5: 107; col. 11, lines 38-44).

Re Claim 17, the combined teachings of Yamada, Sotome et al and Ueno et al disclose the method according to claim 16, wherein to divide the frame and to calculate the transform (Ueno et al, fig. 5: 101, 104a-104d), the transform of each of the N blocks is calculated successively (Ueno et al, fig. 5: 101, 104a-104d), and the transformed blocks are transmitted to a delay line at N outputs (Yamada, fig. 17; para 0013).

Re Claim 19, which further recites "wherein, to divide a frame of the signal into N blocks, double blocks are formed that are overlayed on each other by half, the transform of each of the double blocks is performed, the N packets of coefficients are completed by the constant samples to obtain double packets, each of the N double blocks are multiplied by one of the N double packets and multiplied double blocks are obtained, and the multiplied blocks are extracted from the multiplied double blocks." Yamada, Sotome et al and Ueno et al do not explicitly disclose the above limitations as claimed. Official notice is taken that both the concept and advantages of the above limitations are well known in the art. It would have been obvious to divide a frame of the signal into N blocks, double blocks are formed that are overlayed on each other by half, the transform of each of the double blocks is performed, the N packets of coefficients are completed by the constant samples to obtain double packets, each of the N double blocks are multiplied by one of the N double packets and multiplied double blocks are obtained,

and the multiplied blocks are extracted from the multiplied double blocks since the blocks are divided within a circular buffer.

Re Claim 24, which further recites "wherein, to perform the transform the filtering temporal coefficients are divided into Q slots (HDD1-HDD4) of coefficients with progressive length M, 2M, 4M, . . . (2 (Q-1))M points, the transform of each of these slots is performed and transformed slots are obtained, a frame of the electric sound signal is divided into blocks (x1-x8) with a length of M points, the transform of each of these blocks is performed and transformed blocks are obtained, and the transformed blocks are multiplied by the transformed slots and corresponding multiplied blocks are obtained by inverse transformation to the blocks of signals that half-overlap each other two by two in time." Yamada, Sotome et al and Ueno et al do not explicitly disclose the above limitations as claimed. Official notice is taken that both the concept and advantages of the above limitations are well known in the art. It would have been obvious to perform the transform the filtering temporal coefficients are divided into Q slots (HDD1-HDD4) of coefficients with progressive length M, 2M, 4M, . . . (2 (Q-1))M points, the transform of each of these slots is performed and transformed slots are obtained, a frame of the electric sound signal is divided into blocks (x1-x8) with a length of M points, the transform of each of these blocks is performed and transformed blocks are obtained, and the transformed blocks are multiplied by the transformed slots and corresponding multiplied blocks are obtained by inverse transformation to the blocks of signals that half-overlap each other two by two in time since the transformations are discrete Fourier transforms and inverse discrete Fourier transforms.



Claims 25-28 have been analyzed and rejected according to claim 24.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1, Sotome et al, US Patent Pub. 2003/0086572 A1 and Ueno et al, US Patent 5,960,390 as applied to claim 16 above, and further in view of Parry et al, US Patent 6,535,920 B1.

Re Claim 18, the combined teachings of Yamada, Sotome et al and Ueno et al disclose the method according to claim 16 wherein, to divide the frame into N blocks (Ueno et al, fig. 5: 101), but fails to disclose an electric sound signal is stored in a circular buffer memory with capacity proportional to the nth of the frame of the electric sound signal. However, Parry et al does (fig. 7: 124).

Taking the combined teachings of Yamada, Sotome et al, Ueno et al and Parry et al as a whole, one skilled in the art would have found it obvious to modify the method according to claim 16 wherein, to divide the frame into N blocks (Ueno et al, fig. 5: 101) of Yamada, Sotome et al and Ueno et al with an electric sound signal is stored in a circular buffer memory with capacity proportional to the nth of the frame of the electric sound signal as taught in Parry et al (fig. 7: 124) for storing of the processed signals.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 as applied to claim 1, in view of Ishii, US Patent 6,961,433 B2, and further in view of Ueno et al, US Patent 5,960,390.

Re Claim 20, the combined teachings Yamada and Sotome et al disclose the method according to claim 1 but fails to disclose wherein, to simulate, an artificial head that comprises two acoustic detectors are placed in a median axis of two acoustic diffusion systems (Ishii, fig. 6: BR1, BR2, BL1, BL2; col. 10, lines 46-61), direct fields and crossed fields received by the acoustic detectors are aligned two by two by varying the position of the artificial head (Ishii, fig. 6: BR1, BR2, BL1, BL2; col. 10, lines 46-61). Yamada and Ishii fail to disclose an electric signal in the form of a Dirac comb is applied simultaneously as input to the two acoustic diffusion systems. However, Ueno et al does (fig. 5: 104a-104d; col. 10, lines 13-24).

Taking the combined teachings of Yamada, Sotome et al, Ishii and Ueno et al as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada and Sotome et al with wherein, to simulate, an artificial head that comprises two acoustic detectors are placed in a median axis of two acoustic diffusion systems (Ishii, fig. 6: BR1, BR2, BL1, BL2; col. 10, lines 46-61), direct fields and crossed fields received by the acoustic detectors are aligned two by two by varying the position of the artificial head (Ishii, fig. 6: BR1, BR2, BL1, BL2; col. 10, lines 46-61) as taught in Ishii with an electric signal in the form of a Dirac comb is applied simultaneously as input to the two acoustic diffusion systems as taught in Ueno et al (fig. 5: 104a-104d; col. 10, lines 13-24) to modify sound or original sound recordings in order to give the listener optimal listening comfort.

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US patent Pub. 2003/0086572 A1 as applied to claim 1 above, in view of Ueno et al, US Patent 5,960,390.

Re Claim 21, the combined teachings of Yamada and Sotome et al disclose the method according to claim 1 but fails to disclose wherein, to diffuse, equalization functions are incorporated in the cells situated upstream from the Fourier transform cells. However, Ueno et al does (col. 2, lines 1-16).

Taking the combined teachings of Yamada, Sotome et al and Ueno et al as a whole, one skilled in the art would have found it obvious to modify the method according to Yamada and Sotome et al with wherein, to diffuse, equalization functions are incorporated in the cells situated upstream from the Fourier transform cells as taught in Ueno et al (col. 2, lines 1-16) to make the frequency bandwidths equal.

Re Claim 22, the combined teachings of Yamada, Sotome et al and Ueno et al the method according to claim 21, wherein the frequency components of four frequency filters obtained from four modified temporal filters are adjusted independently (Ueno et al, fig 5: 104a-104d).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, US Patent Pub. 2003/0076973 A1 and Sotome et al, US Patent Pub. 2003/0086572 A1 as applied to claim 1 above, in view of Ueno et al, US Patent 5,960,390.

Re Claim 23, the combined teachings of Yamada and Sotome et al disclose the method according to claim 1 but fails to disclose wherein, to diffuse, the phase and/or the amplitude of the temporal filter coefficients are modified along all or part of the impulse response. However, Ueno et al does (col. 5, line 66 through col. 6, line 14; fig. 5:104a-104d).

Taking the combined teachings of Yamada, Sotome et al and Ueno et al as whole, one skilled in the art would have found it obvious to modify the method according to Yamada with wherein, to diffuse, the phase and/or the amplitude of the temporal filter coefficients are modified along all or part of the impulse response as taught in Ueno et al (col. 5, line 66 through col. 6, line 14; fig. 5:104a-104d) to effectively prevent pre-echo from being generated while keeping the length of a block in the spectrum transform constant.

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Monikang whose telephone number is 571-270-1190. The examiner can normally be reached on M-F, alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10/15/2007

  
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